

ABSTRACT OF THE INVENTION

A method and system for dynamically controlling and managing a fuel cell system is provided. The method and system ensures that predetermined operating parameters and conditions are met. This is achieved using programmable on-board hardware that is already available in the fuel cell system and does not require additional components. More specifically, operating characteristics are measured such as the voltage of the weakest cell, the stack output voltage, the stack output current, the current of a battery being charged by the stack and/or the power of the stack. When each of these measurements is taken, a determination is made to find the load change that should be made in order to adjust the stack voltage to achieve a desired goal. In particular, the load on the fuel cell system can be varied by adjusting the duty cycle of the switches within a DC-DC converter that is being operated by an associated microcontroller. Measurements can also be used to measure methanol concentration and to predict optimal points at which a dosing of additional fuel should be delivered to the fuel cell system.

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